

On-Demand Urine Analyzer, Phase I

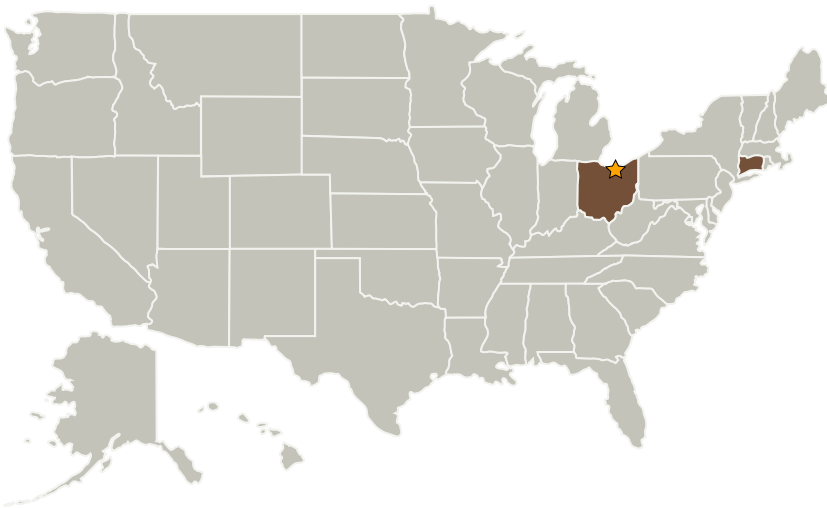
Completed Technology Project (2004 - 2004)



Project Introduction

This Small Business Innovation Research program will develop a novel surface-enhanced Raman (SER) sensor that will perform real-time chemical analysis of urine. It will provide key physiologic information to monitor astronaut health and indicate appropriate preventative treatment. The Phase I program will demonstrate feasibility by establishing the ability of sol-gel chemistry to both select key chemicals: amino acids, biomarkers, drugs, and metabolites, and enhance their Raman signals. The Phase II program will design and build a prototype ?On-Demand Urine Analyzer? for ground-based measurement. This will include interfacing the SER sensor between a sampling system and a Raman instrument. The Phase II program will also design a low mass, low power version of this system (Figure 1) to be used on the International Space Station (ISS) and other vehicles employed during extended space flight missions (e.g. Mars expedition).

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Real-Time Analyzers, Inc.	Supporting Organization	Industry	Middletown, Connecticut



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Connecticut

Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Frank E Inscore

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.2 Atomic and Molecular Species Assessment